

KARAKTERISTIK MIKROBIOLOGIS DAN FISIKO-KIMIA KEJU MOZZARELLA DENGAN STARTER *Lacticaseibacillus paracasei* LVE DAN LVG

Wendy Wibowo
19/439398/PT/08033

INTISARI

Lacticaseibacillus paracasei LVE dan LVG adalah dua strain bakteri asam laktat yang diisolasi dari *bee bread* lebah klanceng (*Tetragonula laeviceps*). Penelitian ini bertujuan untuk mengetahui karakteristik dan kualitas mikrobiologis dan fisiko-kimia keju mozzarella dengan bakteri starter *Lacticaseibacillus paracasei* LVE dan LVG selama penyimpanan. Perlakuan dalam penelitian meliputi penambahan starter *Lacticaseibacillus paracasei* LVE (4%) dan LVG (4%) serta penyimpanan selama 12 hari. Pada hari ke 0 dan 12 keju diamati dan dilakukan pengujian. Masing-masing perlakuan dilakukan pengulangan sebanyak tiga kali. Pengujian yang dilakukan meliputi uji rendemen, mikrobiologis (total BAL), pH, kadar air, asam lemak bebas (FFA), protein terlarut, tekstur (*hardness*, *springiness*, *gumminess*, *chewiness*), serta organoleptik (warna, rasa, aroma, tekstur, dan daya terima). Analisis data menggunakan analisis Rancangan Acak Lengkap (RAL) pola faktorial 2 x 2 untuk uji mikrobiologis dan fisiko-kimia, serta analisis *Kruskal Wallis* untuk uji organoleptik. Hasil penelitian menunjukkan bahwa penambahan starter LVE dan LVG berpengaruh nyata ($P < 0,05$) terhadap rerata kadar protein keju secara berurutan yaitu $28,67 \pm 0,84$ dan $27,35 \pm 0,4$, rerata *hardness* keju yaitu $8,73 \pm 0,99$ dan $6,40 \pm 0,22$, rerata *springiness* keju yaitu $81,38 \pm 4,26$ dan $70,76 \pm 4,69$, dan rerata *gumminess* yaitu $645,46 \pm 142,00$ dan $431,90 \pm 44,52$. Lama penyimpanan pada hari ke 0 dan 12 berpengaruh nyata ($P < 0,05$) terhadap penurunan rerata pH yang secara berurutan yaitu $5,82 \pm 0,16$ dan $5,60 \pm 0,09$, kenaikan rerata keasaman yaitu $0,47 \pm 0,05$ dan $0,67 \pm 0,13$, dan kenaikan rerata FFA yaitu $2,06 \pm 0,58$ dan $3,28 \pm 0,44$. Kesimpulan penelitian ini adalah keju mozzarella dengan starter LVE lebih unggul daripada starter LVG berdasarkan kadar protein dan tekstur (*hardness*, *springiness*, *gumminess*). Selama penyimpanan 12 hari kualitas keju mozzarella masih layak untuk dikonsumsi dilihat dari kualitas mikrobiologis, fisik, kimia, dan organoleptik.

Kata kunci : *Lacticaseibacillus paracasei* LVE, *Lacticaseibacillus paracasei* LVG, karakteristik keju, kualitas keju

MICROBIOLOGIST AND PHYSICO-CHEMICAL CHARACTERISTICS OF MOZZARELLA CHEESE WITH *Lacticaseibacillus paracasei* LVE AND LVG STARTER

Wendy Wibowo
19/439398/PT/08033

ABSTRACT

Lacticaseibacillus paracasei LVE and LVG are two strains of lactic acid bacteria isolated from the *bee bread* of the Klanceng bee (*Tetragonula laeviceps*). This research aims to determine the microbiological and physico-chemical characteristics and quality of mozzarella cheese using the starter bacterial *Lacticaseibacillus paracasei* LVE and LVG during storage. Treatments in the study included adding the starter *Lacticaseibacillus paracasei* LVE (4%) and LVG (4%) with 12 days of storage. On days 0 and 12 the mozzarella cheese was observed and tested. Each treatment was repeated three times. Test carried out include yield, microbiological (total LAB), pH, water content, *free fatty acids* (FFA), dissolved protein, texture (*hardness, springiness, gumminess, chewiness*), and organoleptic (color, taster, aroma, texture, and acceptability). Data analysis result used Completely Randomized Design (CRD) analysis with 2 x 2 factorial pattern for microbiological and physico-chemical test and Kruskal Wallis analysis for organoleptic tests. Research results show that the addition of LVE and LVG starters had a significant effect ($P < 0.05$) on the average cheese protein content, respectively, namely 28.67 ± 0.84 and 27.35 ± 0.47 , the average cheese hardness namely 8.73 ± 0.99 and 6.40 ± 0.22 , the average springiness namely 81.38 ± 4.26 and 70.76 ± 4.69 , and the average gumminess namely 645.46 ± 142.00 and 431.90 ± 44.52 . The length of storage on days 0 and 12 had a significant effect ($P < 0.05$) on the decrease in the average pH, respectively, namely 5.82 ± 0.16 and 5.60 ± 0.09 , the increase in the average acidity, namely 0.47 ± 0.05 and 0.67 ± 0.13 , and the average increase in FFA was 2.06 ± 0.58 and 3.28 ± 0.44 . The conclusion of this research is that mozzarella cheese with LVE starter has advantages over LVG starter based on protein content and texture (*hardness, springiness, and gumminess*). During 12 days of storage the quality of the mozzarella cheese is still suitable for consumption in terms of microbiological, physical, chemical, and organoleptic qualities.

Keywords: *Lacticaseibacillus paracasei* LVE, *Lacticaseibacillus paracasei* LVG, cheese characteristics, cheese quality